HANDBOOK OF PHONOLOGICAL DATA FROM A SAMPLE OF THE WORLD'S LANGUAGES

A Report of the Stanford Phonology Archive

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090 Akan

090 01 p-aspirated[01]
[p-aspirated-palatalized] [61]
[p-aspirated-labialized] [63]

090 02 b[01] [02]
[b-palatalized] [61]
[b-labialized] [63]
[m] [64]
[m-palatalized] [61] [64]

090 03 t-aspirated[01]
[t/s-aspirated] [62]

090 04 d[01]
[d/z] [62]
[z] [62]
(allo,free)
[n] [64]
[eng] [64] [65]

090 06 k-aspirated[01]
*[k-aspirated-labialized]

090 07 g[01]

090 08 k-aspirated-labialized[01] [63]
(tag(-),allo)
*/k-aspirated/

090 09 t/c-fricative-aspirated[01] [03] [30]

090 10 t/c-fricative-aspirated-labialized[01] [03] [30]

090 11 d/j-fricative[01] [03] [30]

090 12 d/j-fricative-labialized[01] [03] [30]

090 13 f
[f-palatalized] [61]

090 14 s

090 15 c-fricative[03] [30] [66]
(allo,limited)
*/h/

090 16 c-fricative-labialized[03] [30]
[c-fricative-labialized-nasalized] [64]
(limited)

090 Akan

17 m-syllabic

18 n-syllabic
[m-labiodental-syllabic] [65]
[n-laminal-syllabic] [65]
[eng-syllabic] [65] [65]

19 r-trill[04] [05] [31]
[r-flap]
(free)

20 r-trill-syllabic

21 h
*[c-fricative]
[h-nasalized] [64]
[h-nasalized-palatalized] [64] [66]
[h-labialized] [63]

50 iota-nasalized

51 i
[i-over-short] [67]
[i-voiceless-over-short] [67]
(allo,free)
[u-trema] [68] [69]
*/u/

52 i-nasalized

53 iota
[iota-over-short] [67]
[iota-voiceless-over-short] [67]
(allo,free)

54 e
[o-trema] [68]

55 o-trema-long[07]
(limited)
[epsilon]
[epsilon-nasalized] [70] [71]

56 o-open-trema-long[07]
(limited)

090 Akan

57 a
[ash] [72]
[alpha-unrounded] [72]

58 a-nasalized
[ash-nasalized] [72]

59 u
*[u-trema]
[u-over-short] [67]
[u-voiceless-over-short] [67]
(allo,free)

60 u-nasalized
[u-trema-nasalized] [69]

61 upsilon
[upsilon-over-short] [67]
[upsilon-voiceless-over-short] [67]
(allo,free)

62 upsilon-nasalized

63 o
[o/yod-over-short] [73]
[o-nasalized] [70] [71]

64 o-open
[o-open-nasalized] [70] [71]

65 w[05]
[w-front] [61]
[w-nasalized] [64]
[n-labialized] [64]
(free)

66 yod
[n-palatal] [03] [30] [64]

81 high

82 mid

83 low

090 $a Akan $b Fante (of Anumabo) $d Kwa $e Ghana $f 2 million speakers of all Akan dialects $g Jim Bauman $g Jim Lorentz (review) $g John Crothers (editor)

090 $a Welmers, William Everett $b 1946 $c A Descriptive Grammar of Fanti $f (Language dissertation No. 39) $g Philadelphia: LSA

090 $a Ladefoged, Peter $b 1964 $c A Phonetic Study of West African Languages $f West African Language Monographs $g Cambridge: Cambridge University Press

090 $a Stewart, J. M. $b 1967 $c Tongue Root Position in Akan Vowel Harmony $d Phonetica 16.185-204

090 $a Schachter, Paul and Victoria Fromkin $b 1968 $c A Phonology of Akan: Akuapem, Asante, Fante $f Working Papers in Phonetics No. 9, University of California, Los Angeles

090 $a LONG VOWELS $A Long vowels of various qualities occur (Welmers, p.18), some clearly morpheme internal, others not. Schachter and Fromkin give syllable structure rules which disallow

syllable internal long vowels. (p.46ff) The Archive follows them in treating the long vowels as disyllabic.

090 $a **NASAL PROSODY** $A Nasality stretches over a vowel and a preceding voiced consonant as well as over a preceding /h/ or /c-fricative-labialized/. Syllable final nasals also nasalize a preceding vowel. It is not clear that such secondarily nasalized vowels also nasalize a preceding consonant; forms cited by Welmers (p.30) show fluctuation between [m] and [b] and between [n] and [d] in this position.

090 $a **REDUPLICATION** $A Reduplication occurs with verbal and non-verbal stems. In some cases a single syllable is reduplicated, in some an entire polysyllabic stem. With verbal stems simple reduplication indicates "intensive, repeated, habitual, continual, or causative action." (p.36) In the commonest form the stem initial consonant is copied, followed by a high vowel (high or lower high according to vowel harmony) which is front before front vowels and /a/, back before back vowels. A syllable final nasal is also copied, and assimilates to the following consonant in position. Normally the nasality of the stem syllable is also copied, except that if the stem has /a-nasalized/ the prefix takes a nasal vowel only when the stem initial consonant is a nasal (i.e. /b, d/.) When the stem syllable has a central vowel preceded by a labialized consonant other than a labialized palatal the reduplicated vowel is back rather than front in most Akan dialects except some Fante dialects. Also when the stem has a central vowel preceded by a velar or labial consonant the prefix may have either a front or back vowel in some dialects including Fante. In the reduplication of disyllables all segments except a final consonant are copied. (Schachter & Fromkin, p.155ff)

090 $a **SHORT VOWELS** $A Before a final consonant vowels are "somewhat shorter and assimilated partly in the direction of the midcentral tongue position." Also the high and lower high vowels "are somewhat shorter before another vowel." (p.17)

090 $a **STRESS** $A Some instances of stress are phonemic. (See page 22, where non-automatic stress is treated as a determiner of juncture.) Stress occurs automatically "with the following tones: The first high tone of a series of one or more (with certain exceptions, see text [JL]) ...The first low tone of an initial series of two or more, and an initial single low tone except on an initial vowel (i.e. an initial low tone on a syllabic consonant [JL]) ...The stress in these cases is of a lesser degree than that on a first high tone. ...The second low tone of a series of low tones preceded by a high tone. The stress here may be even weaker.... In general, the actual volume of stressed vowels appears to decrease throughout an utterance..., mid tone always has zero stress, except that a mid tone following a low tone has a weak stress." (p.25-26)

090 $a **SYLLABLE** $A (C)V(C) $A The vocalic portion may be a syllabic consonant. Note that labialized consonants are treated here as units, not as /C.w/ or /C.u/. $A final C: [m, n, w, r-trill], also other assimilated nasal consonant phones

090 $a **TONE** $A domain of tone: mora

090 $a **TONE** $A Akan has a terraced level system, with downdrift. The tones are /high, mid, low/, with /mid/ being downstepped /high/. The tone marking system used by Welmers does not distinguish phonemic /mid/ from /high/ which is lowered by downdrift within a word. Schachter and Fromkin analyze /mid/ as a sequence /low.high/, or /high.low/ with /low/ deleted, the former sequence realized as /mid/, the latter as /high/ which downsteps a following /high/. They also regard /mid/ as having purely surface status, i.e. as always resulting from deletion of certain grammatical morphemes, and never occurring in stems. (Schachter & Fromkin, p.110ff) Welmers (p.24f) gives pitch levels for the tones: /low/ = pitch of "maximum comfortable relaxation of vocal cords;" /high/ = "about a musical fifth" above; /mid/ = "a minor third" below /high/.

090 $a **VOWEL HARMONY** $A The vowels fall into two sets, an "advanced" set /i, e, u, o, i-nasalized, u-nasalized/ and a "non-advanced" set /iota, epsilon, a, upsilon, o-open, iota-nasalized, a-nasalized, upsilon-nasalized/. The advanced set have advanced tongue root (Stewart) which leads to somewhat higher quality, as indicated in the segment names assigned here, and they are also "more relaxed" (Welmers p.15), which may indicate some degree of breathiness. Other Akan dialects than the Fante dialect described by Welmers have another advanced vowel, /schwa/ (frequently realized [ash]) which is paired with /a/; in Fante this has become /e/, but for morphophonemic reasons Welmers writes it as advanced /a/, using the same diacritic he uses for all the advanced vowels. Roots have vowels from only one of the two sets. (Schachter & Fromkin, p.55) Generally speaking stems with advanced vowels contain either /i/ or /u/. /o/ is especially rare as the only vowel of a stem, and those few cases which occur are analyzed by Welmers as /u.o/, with deletion of /u/. (p.18, 23f) Affixes normally have non-advanced vowels, becoming advanced when the nearest root vowel is a tense vowel other than /schwa/. For the dialect described by Welmers this probably means that the vowel /e/, when it corresponds to /schwa/ of other dialects, does not cause affix vowels to advance; this is hard to determine from the sources. In addition the palatal affricates and the distinctively labialized velars also cause affix vowels to become advanced. Welmers and Schachter and Fromkin analyze this as deletion of /i/ or /u/, which causes both the advanced vowel harmony and the palatalization or labialization. (Welmers, p.19; Schachter and Fromkin, p.97) There is also a limited degree of vowel harmony across word boundaries in that the vowel of a word becomes advanced before a

non-low advanced vowel in the first syllable of the following word. This also occurs before the palatals and labialized consonants. (Schachter & Fromkin, p.99f)

090 $a **VOWEL HEIGHT AND PITCH** $A Welmers notes that his informants, reciting isolated vowels in tongue height sequence from /i/ to /a/ to /u/ "did a striking performance of going first down and then up the scale" in pitch levels. (p.25)

090 01 $A "Voiceless stops are aspirated fortis, voiced consonants are lenis." (p.10)

090 02 $A [b] is "almost inaudible after [m]." (p.13) Schachter & Fromkin report that in some dialects all voiced stops are completely nasalized after nasals. (p.77f)

090 03 $A Ladefoged (p.20) says the palatals are "made by the blade or even the front of the tongue...; the centre of the tongue is raised towards the hard palate." Both he and Schachter & Fromkin use symbols for palatal consonants ([c-fricative], etc.).

090 04 $A /r-trill/ "occasionally" becomes [r-flap]. For /r-trill/ "the position of all but the trilling tip of the tongue is homorganic with, or at least attracted to, the position of the following vowel, if there is one, or else that of the preceding vowel...." If the adjacent vowel has advanced tongue root "the tongue seems to be more relaxed during the articulation of /r-trill/, giving it something of the phonetic effect of [l]." (p.13)

090 05 $A Schachter & Fromkin derive syllable final [w, r-trill] from /p, t/. They also derive word final [glottal stop], not mentioned by Welmers, from /k/. There appears to be no basis for this in morpheme alternation. Besides, [w] occurs syllable initially in contrast with /p/. (Schachter & Fromkin, p.81)

090 07 $A Welmers reports two words with the vowels /o-trema-long, o-open-trema-long/ occurring before /r-trill/, and analyzes them as /u.e/ and /upsilon.epsilon/ respectively. (p.20)

090 30 $A There is a certain amount of contrast between the palatals and both velars and alveolars. The Archive follows Stewart in regarding them as separate phonemes for this reason. Both Welmers and Schachter & Fromkin analyze the palatal obstruents as clusters of velar plus /i/, and the palatal nasal as [n] plus /i/, with /i/ deleted. Contrast occurs as follows: the palatals occur regularly before the non-low front vowels and also before /a/. Velars also occur before /a/ and under limited circumstances before front vowels. Specifically /k-aspirated/ occurs before /i, e/ (in contrast with /t/c-fricative-aspirated/) in reduplicated prefixes, when /t-aspirated, s/ follow in the next syllable, before the sequence /i.r-trill.a/, and in the verb prefix /k.e/. Apparently /t/c-fricative-aspirated/ does not occur before /a/. /t/c-fricative-labialized/ and /d/j-fricative/ contrast with /k-aspirated-labialized/ and /g/ respectively before /a/. /d/j-fricative-labialized/ occurs only before front vowels, and has no velar counterpart. (Welmers, p.11, 12, 19) [n-palatal] contrasts with [n] before /a/. (p.11, 19) A further complication is that in dialects with /schwa/ the labialized palatals occur before /schwa/ to the exclusion of the labialized velars; this is obviously related to the fronting of /u/ in the same environment. (On palatalization in general see Schachter & Fromkin, p.89ff.)

090 31 $A /r-trill/ occurs only in syllable final position and morpheme medially before oral vowels (also in stem initial position after subject prefixes). In the former position it contrasts with [n] (i.e. /d/), in the latter there is no contrast, /d/ never occurring morpheme medially except for a limited degree of free variation with /r-trill/ in some dialects. Schachter & Fromkin derive all medial occurrences of /r-trill/ from /d/. (p.84f)

090 61 $A /p-aspirated, b, f, w/ are palatalized weakly before /i, iota/, strongly, with a [yod] glide before /e, epsilon/. (p.10) This treats [w-front] as a strict allophone of /w/. However, Ladefoged (p.51) shows contrast between [w] and [w-front] before /e/.

090 62 $A /t-aspirated, d/ become [t/s-aspirated, d/z] before /i, iota/. The stops are retained in a very few cases. Also there is one instance of [d/z] occurring before /a/. (p.10) There are also a few cases of the affricates occurring before /e, epsilon/. (p.19) The "stop attack of [d/z] is very light in some cases and in rapid speech is oten scarcely audible." (p.10)

090 63 $A /p-aspirated, b, k-aspirated, h/ are labialized ("light bilabial release") before /o/ followed by [n] or [r-trill]. (p.13) Schachter & Fromkin say that all consonants are labialized before rounded vowels but that the labialization is "not always easily discernible." (p.58f)

090 64 $A /b, d/ are nasalized to [m, n] in syllable initial position before a nasal vowel and in syllable final position regardless of the nasality of the preceding vowel. Also in syllable initial position before a nasal vowel /yod, w, h, c-fricative-labialized/ are nasalized to [n-palatal, w-nasalized, h-nasalized, c-fricative-labialized-nasalized]. (Welmers mentions the possibility of an interpretation along these lines, but keeps the nasal consonants as separate phonemes. The interpretation here is based on Schachter & Fromkin. (p.75f) The Fante dialect described by Welmers lacks [eng] in syllable final position, but it does occur in other dialects. An alternate pronunciation of [w-nasalized] is [n-labialized] (p.13); Schachter & Fromkin give [eng-labialized] for this. (p.72))

090 65 $A Syllabic nasals and syllable final nasals become homorganic to a following consonant. (p.13; Schachter & Fromkin, p.76) (The sources do not give a full set of examples for the syllable final nasals.) Welmers gives [h-voice-nasalized-syllabic] as the syllabic variant before /h/.

090 66 $A /h/ becomes [c-fricative] before oral front vowels. Before nasal front vowels it becomes [h-nasalized-palatalized]. However before /e/ from */schwa/ [h] is retained, producing contrast between [h] and [c-fricative]. (p.11, 16)

090 67 $A The high and lower-high vowels become over-short in low tone syllables followed by [w, r-trill, m, n] and a vowel, and may be devoiced. "In some cases, especially before /r-trill/ it is difficult to tell that there is a vowel at all." (p.17f) Schachter & Fromkin say that high vowels are deleted before /r-trill/ followed by a vowel (no reference to tones.) (p.104)

090 68 $A /i, e/ are rounded to [u-trema, o-trema] before the suffix [m.u-nasalized]. (p.16)

090 69 $A /u, u-nasalized/ are fronted to [u-trema, u-trema-nasalized] between an alveolar consonant and a following vowel. (The examples have /a/.) (p.17) Schachter & Fromkin say this happens only before /schwa/, and that in some Asante dialects it occurs after velar consonants as well. (p.94f)

090 70 $A Vowels are nasalized before a syllable final nasal consonant. This leads to phonetic [epsilon-nasalized, ash-nasalized, o-nasalized, o-open-nasalized] (no examples of [e-nasalized]) which do not occur phonemically. (For the non-mid vowels this leads to neutralization of nasalized and non-nasalized phonemes.) (p.17) However, Schachter & Fromkin say that only the high and lower-high vowels are nasalized in this environment. (p.80)

090 71 $A Vowels are nasalized adjacent to a nasalized vowel. (Schachter & Fromkin, p.78f) (It is not clear whether all vowel qualities occur in this environment.)

090 72 $A /a/ is fronted to [ash] after /i/, and backed to [alpha-unrounded] after /u/. (p.16f)

090 73 $A /o/ "has a light palatal off-glide before a consonant followed by /i/. (p.17)